

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
3 March 2005 (03.03.2005)

PCT

(10) International Publication Number
WO 2005/019682 A1

(51) International Patent Classification⁷: **F16F 9/53**

(21) International Application Number:
PCT/GB2004/003595

(22) International Filing Date: 20 August 2004 (20.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0319552.6 20 August 2003 (20.08.2003) GB

(71) Applicant (for all designated States except US): **RE-
ACTEC LTD** [GB/GB]; Adaptive House, Quarrieside
Court, Livingston EH54 6AX (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BUCKINGHAM,
Mark-Paul** [GB/GB]; Adaptive House, Quarrieside

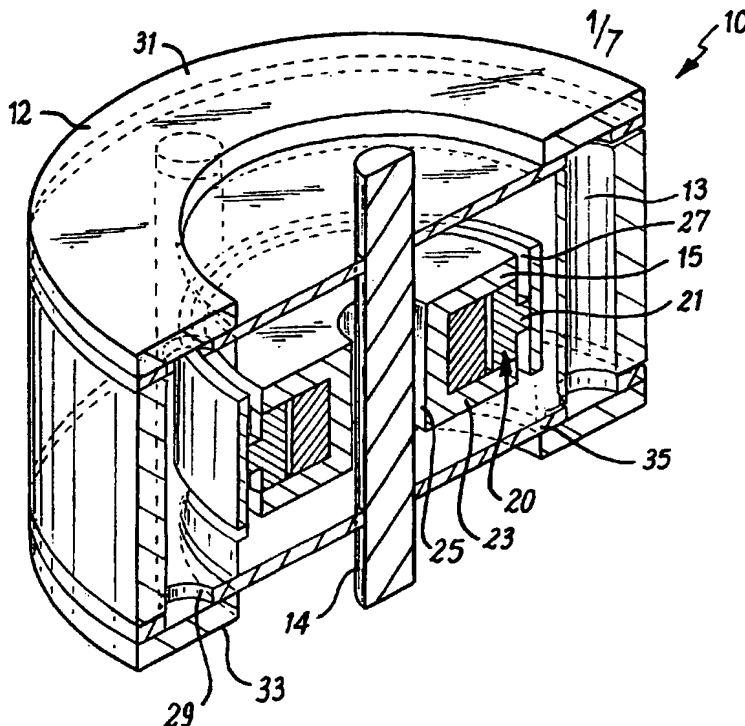
Court, Livingston EH54 6AX (GB). **DICKSON, Stephen**
[GB/GB]; Adaptive House, Quarrieside Court, Livingston
EH54 6AX (GB). **KEEPAX, Charles** [GB/GB]; Adaptive
House, Quarrieside Court, Livingston EH54 6AX (GB).
MCKEOWN, John, Paul [GB/GB]; Adaptive House,
Quarrieside Court, Livingston EH54 6AX (GB). **WAT-
SON, Peter** [GB/GB]; Adaptive House, Quarrieside Court,
Livingston EH54 6AX (GB).

(74) Agent: **KENNEDYS PATENT AGENCY LIMITED**;
Floor 4, Queens House, 29 St Vincent Place, Glasgow G1
2DT (GB).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,

[Continued on next page]

(54) Title: **VIBRATION CONTROL SYSTEM**



(57) Abstract: A variable damper with a low off-state, having an outer member (12) including a magnetic sleeve and an inner shaft (14), between which is supported an electromagnet (20). Magnetorheological fluid is inserted between the members and a flow path (25) is established over a control region between the electromagnet and the sleeve. Various embodiments of the damper are presented with the electromagnet supported on the outer member and on the shaft. A vibration control system incorporating a magnetorheological fluid variable damper is presented wherein the system provides a relative figure of merit for vibration control of at least 0.83. Devices incorporating the damper in a vibration control system are presented for snow boards, clubs, drills, engines, pumps, generators and vehicles.



PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.